AFM

Week 3 Assignment

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Question

Didec Co is a private company involved in aluminium mining currently financed by 80% equity and 20% debt by market values.

Following a recent discovery of large deposits of copper in an area, the local government of the area has offered Didec Co the exclusive rights to mine the copper. It is expected that there are enough deposits to last at least 15 years. Initial estimates suggest that the project will generate free cash flows of $4 million in the first year, rising by 100% per year in each of the next two years, and then by 15% in each of the two years after that. The free cash flows are then expected to stabilise at the year-five level for the remaining ten years.

Financing:
The cost of the project, payable at the start, is expected to be $150 million, comprising machinery, working capital and the mining rights fee payable to the local government. None of these costs is expected to be recoverable at the end of the project's 15-year life.

Didec Co's closest competitor is Wazu Co, a listed company which mines metals worldwide. Wazu Co's cost of capital is estimated at 9·4%, its geared cost of equity is estimated at 16·83% and its pre-tax cost of debt is estimated at 4·76%. These costs are based on a capital structure comprising of 200 million shares, trading at $7 each, and $1,700 million 5% irredeemable bonds, trading at $105 per $100.

Both Wazu Co and Didec Co pay tax at an annual rate of 25% on their taxable profits.

The local government has offered Didec Co a subsidised loan over 15 years for the full $150 million at an interest rate of 3% instead of Didec Co's normal borrowing rate of 7%. The interest payable is allowable for taxation purposes. It can be assumed that Didec Co's business risk is not expected to change as a result of undertaking this project.

Required:

a. **Calculate the Adjusted Present Value (APV) for the proposed copper mining project and conclude whether the project should be accepted or not. State any assumptions made. (12 marks)**

b. **Comment upon the circumstances under which APV might be a better method of evaluating a capital investment than Net Present Value (NPV) (3 marks)**

Total 15 marks

Answer

DIDEC – APV

Base Discount Rate					
Data table		**Investment**			
VD	1785	**Year**	**CF**	**11%**	**PV ($m)**
VE	1400	0	-150	1.000	-150.00
		1	4	0.901	3.61
keg	0.1683	2	8	0.813	6.50
1-t	0.75	3	16	0.733	11.72
Kd = YTM	0.0476	4	18.4	0.660	12.15
VE+VD(1-T)	2738.75	5	21.16	0.595	12.60
VD(1-t)*Kd	63.7245	6 to 15	21.16	3.506	74.18
VE*Keg	235.62	**Base case**	**NPV**		**-29.24**
Keu	**11%**				

Financing		
Annual tax relief on debt interest	($150m*3%*25%)	1.13
Annuity factor for 15 years @ **7%**	(Read from tables)	9.11
PV of annual tax relief		10.25
Cheap loan		
PV of annual interest saved	($150m*4%*9.108)	54.65
PV of tax relief lost on saved interest	($150m*4%*25%*9.108)	-13.66
PV of financing side effects		**51.23**
APV	(Base case NPV + PV of financing side effects)	**21.99**

Based on these estimates the project **is financially viable.**

Note:

Discount Business or Investment decision cash flow with Keu

Discount Financing decision cash flow with YTM (Kd) = 7% (1st option) or Rf

Assumptions.

i. All forecast figures and estimates used in the estimation are reasonably accurate. The company may have to perform sensitivity analysis on key variables within the annual cash flow particularly as the business side of the project is generating a negative return.

ii. It is also assumed that the rights to mining can be secured over the 15-year period

iii. It is also assumed that the tax and inflation rates will remain unchanged over the 15-year period.

iv. The ungeared cost of equity of Wazu Co is assumed represent the business risk of the project since both companies operate in the same industry. This may not necessarily be the case as no two businesses are exactly the same and so the company needs to assess the validity of this assumption.

v. The overall value and acceptability for that matter of the project is dependent on the local government providing the promised subsidy. The company may need to investigate the ability or willingness of the local government to be able to do this over the full 15-year period

vi. It is also assumed that all cash flows occur at the end of the year except initial investment

APV be a better technique to use than NPV when

i. There is a significant change in capital structure as a result of the investment.

ii. The investment involves complex tax payments and tax allowances, and/or has periods when tax is not paid.

iii. Subsidised loans, grants or issue costs exist.

iv. Financing side effects (e.g. the subsidised loan) which require discounting at a different rate that applied to the mainstream project.